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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,502	12/22/2003	Euan Thomson	7291.P043	7769
7590 10/05/2005			EXAMINER	
Daniel E. Ovanezian Blakely, Sokoloff, Taylor, & Zafman LLP Seventh Floor 12400 Wilshire Boulevard Los Angeles, CA 90025			SULLIVAN, JULIANNE M	
			ART UNIT	PAPER NUMBER
			3737	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/743,502	THOMSON, EUAN	
	<b>Examiner</b>	<b>Art Unit</b>	
	Julianne M. Sullivan	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/10/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as “means” and “said,” should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, “The disclosure concerns,” “The disclosure defined by this invention,” “The disclosure describes,” etc.

2. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).
3. The following typographical error was noted in the claims: “said first signal said second signal” in Claim 7, line 1. Appropriate correction is suggested.

### ***Double Patenting***

4. Applicant is advised that should Claim 34 be found allowable, Claim 36 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 15-17, 20, 21, 23, 31, 32 and 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Mate et al. (U.S. Patent Application Publication No. 2002/0193685).

Mate et al. teaches a method and system for treating a moving target in a patient by applying one or more radiosurgical beams, including generating a pre-operative 3D scan of the target and of the surrounding region, where the 3D scan indicates the position of the target relative to the surrounding region, based on the 3D scan, generating a treatment plan defining a plurality of radiosurgical beams appropriate for creating at least one radiosurgical lesion on the target, in near real time, detecting the motion of the target to determine the position of the target at a current time, and generating one or more signals representative of the motion of the target, determining the difference in the position of the target at the current time, as compared to the position of the target as indicated in the CT scan, and adjusting the relative position of the radiosurgical beam source and the target in order to accommodate the difference determined, and applying x-rays to the target from the adjusted position of the radiosurgical beam source, where the position is continually determined and adjusted throughout the treatment, where the motion of the target is a composite of motion caused by the respiration and the heartbeat of the patient, where the radiosurgical beams are x-rays, where fiducials are implanted in the region

surrounding the target and used to determine the position of the target region and where the three-dimensional scan data is CT data, PET data or MRI data (paras. 7, 8, 11, 33, 34, 35, 40, 54, and 69).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mate et al.

Mate et al. teaches all of the features of the present invention except for expressly disclosing that the data is stored in a look-up table. Use of a look-up table is a common, well-known technique of storing data to be used in calculations, thus it would have been obvious to one of ordinary skill in the art at the time of the invention to use a look-up table in the system of Mate et al. in order to provide easy access for the data processing unit to the required data (paras. 10 and 11).

9. Claims 6-12, 22 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mate et al. in view of Sackner (U.S. Patent No. 4,452,252).

Mate et al. teaches all of the features of the present invention, including the use of a correction factor to realign the therapeutic device (para. 11), except for expressly disclosing that the composite motion signals are separated into signals associated with cardiac and pulmonary movement to determine separate correction factors and that the separate correction factors are then combined to form a composite correction factor, which is used to reduce or filter noise from

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the system. In the same field of endeavor, Sackner teaches a method of monitoring cardiopulmonary parameters where a signal is separated and processed into separate cardiac and pulmonary signals, which are filtered to reduce noise (col. 1, lines 60-68, col. 2, lines 1-9, col. 3, lines 24-37 and 51-68, col. 4, lines 1-25 and col. 6, lines 1-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the separation techniques of Sackner to make corrections and reduce noise in the system of Mate et al. in order to simplify the calculations needed to determine the correction factors. Although neither Mate et al. nor Sackner specifically disclose that the correction factors based on the separated cardiac and pulmonary signals could then be combined to form a composite correction factor, Mate et al. does disclose the combination of correction factors based on multiple signals to determine corrective movement of the therapeutic instrument or target (paras. 36 and 39), thus it would have been obvious that these signals could be similarly combined in order to produce a composite correction factor.

10. Claims 13, 14, 29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mate et al. in view of Sackner as applied to Claims 6 and 22 above, and further in view of Murphy et al. (U.S. Patent No. 5,901,199).

Mate et al. in view of Sackner teaches all of the features of the present invention except for expressly disclosing that the first correction factor is generated by digitally comparing near real-time x-ray images with the pre-operative 3D scan to compute the difference in position, where the comparison is done using digitally reconstructed radiographs that are registered with the 3D scan. In the same field of endeavor, Murphy et al. teaches a method for aligning a treatment region during radiation treatment using digitally reconstructed radiographs that are

registered with a 3D scan of the region (col. 3, lines 1-42 and col. 4, lines 38-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the system of Murphy et al. with that of Sackner in order to improve the speed of corrections and precision of the treatment (see for motivation Murphy et al. at col. 2, lines 58-67 and col. 3, lines 1-8).

11. Claims 18, 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mate et al. in view of Wessels et al. (U.S. Patent No. 6,314,312).

Mate et al. teaches all of the features of the present invention except for expressly disclosing a robotic controller and a robotic arm holding the radiation source. In the same field of endeavor, Wessels et al. teaches a system of providing radiation therapy while tracking organ movement using a robotic controller and holder of the radiation source (col. 4, lines 36-67, col. 5, lines 44-53 and col. 7, lines 27-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the robotic arm of Wessels et al. with the system of Mate et al. in order to provide improved maneuverability of the radiation source needed to track the movement of the target region.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Whiting et al. (U.S. Patent No. 5,457,728) teaches a method of target region motion tracking for therapy where the signal corresponding to the heartbeat is separated and noise is filtered from the system. Pankratov et al. (U.S. Patent No. 6,889,695) teaches a diagnostic x-ray system that uses digitally reconstructed radiographs to determine positions of the imaged object by comparison with real-time images.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julianne M. Sullivan whose telephone number is 571-272-6084.

The examiner can normally be reached on Monday through Friday 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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